

Architecture from a Manager's Perspective SATURN 2008

Software Engineering Institute
Carnegie Mellon University
Pittsburgh, PA 15213

Linda Northrop
April 2008



Software Engineering Institute

CarnegieMellon

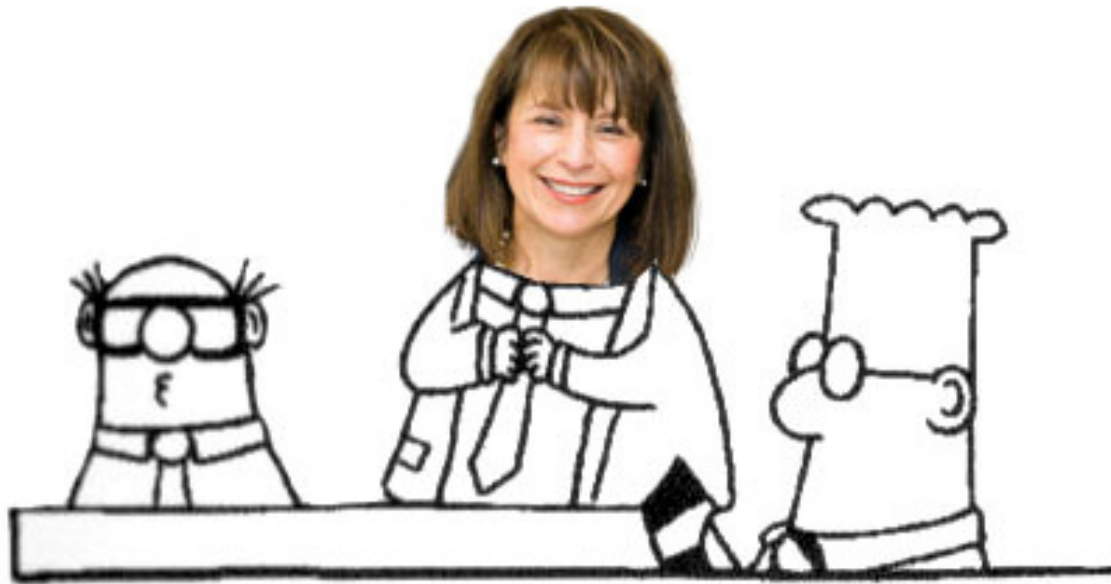
© 2008 Carnegie Mellon University

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE APR 2008		2. REPORT TYPE		3. DATES COVERED 00-00-2008 to 00-00-2008	
4. TITLE AND SUBTITLE Architecture from a Manager's Perspective				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Carnegie Mellon University ,Software Engineering Institute (SEI),Pittsburgh,PA,15213				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES presented at the SEI Software Architecture Technology User Network (SATURN) Workshop, 30 Apr ? 1 May 2008, Pittsburgh, PA.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 13	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Management Perspective



From a Manager



SEI Software Architecture Technology (SAT) Initiative's Focus

Ensure that business and mission goals are predictably achieved throughout a system's lifetime by using effective architecture practices for systems of all scale.

“Axioms” Guiding Our Work

- Software architecture is the bridge between business and mission goals and a software-intensive system.
- Quality attribute requirements drive software architecture design.
- Software architecture drives software development throughout the life cycle.



Architecture-Centric Activities

Architecture-centric activities include the following:

- creating the **business case** for the system
- understanding the **requirements**
- **creating and/or selecting** the architecture
- **documenting and communicating** the architecture
- **analyzing or evaluating** the architecture
- setting up the appropriate **tests and measures** against the architecture
- **implementing** the system based on the architecture
- ensuring that the implementation **conforms** to the architecture
- **evolving** the architecture so that it **continues to meet business and mission goals**



Impediments To Architectural Success

Lack of

- adequate architectural talent, knowledge, skills, and/or experience
- time spent on architectural design and analysis
- disciplined and consistent use of architecture-centric practices

Failure to

- identify the key quality attributes and design for them
- properly create the architecture
- evaluate the architecture
- understand that standards are not a substitute for a software architecture
- ensure that the architecture directs the implementation
- evolve the architecture and maintain documentation that is current
- understand that a software architecture does not come free with COTS or services or the DoDAF

Failure to Meet Business and Mission Goals



Managers: Often the Root of the Problem

Managers at technical and organizational levels are key to architectural success.

They need to

- understand the connection between architecture and business success (i.e., the value and role of software architecture in the design, operation, and evolution of software and software-intensive systems)
- and act accordingly!

When they don't

- The architecture is not a priority.
- Architecture practices are missing or ineffective.

People need to be incentivized and supported.



What Managers Can/Should Do



Ensure

- ⇒ Mission and business goals are used to explicitly identify and characterize key quality attributes.
- ⇒ There is a chief architect and a competent architecture team.
- ⇒ A software architecture is designed that satisfies constraints, meets functional requirements, AND satisfies the key quality attributes.
- ⇒ The software architecture is documented in multiple views.
- = The software architecture is proactively evaluated and needed actions are taken.
- ⇒ There are processes and tools in place to ensure development according to the architecture.
- ⇒ The architecture and its documentation are evolved.
- ⇒ The appropriate stakeholders are involved throughout.
- ⇒ That the impact of technology decisions are understood.
- ⇒ Quality attributes are consistently addressed by the system and software architectures.



Why Don't They?

Too few managers get it.

They are slow to change OR they don't have time.

Many focus exclusively on delivered features, which is what the users see.

Some don't see the value of software architecture.

Some don't understand the connection between business goals and architecture.



This is a technology transition problem.



Some think.....



Technology transition is a contact sport

- requires discipline
- requires training
- requires interaction
- follows a plan
- is orderly



The Truth: Technology Transition is a Collision Sport



Contact Information

PLS Program Director: Linda Northrop

lmn@sei.cmu.edu

<http://www.sei.cmu.edu/architecture>



Software Engineering Institute

Carnegie Mellon

© 2008 Carnegie Mellon University

12



Software Engineering Institute

Carnegie Mellon